

In the Claims:

Please cancel Claims 1 to 5 without prejudice and replace them with the new claims:

1. (New) A vital signs sensing assembly for monitoring physiological signals from the patient's ear canal, comprising in combination
 - a probe adapted for positioning outside of the patient's ear canal;
 - an ear plug fabricated of a pliable and resilient material and having a proximal end and a distal end, wherein said distal end is being adapted for insertion into the patient's ear canal, while the proximal end is connected to said probe, and
 - at least one light emitting source for sending light into the patient's ear canal.
2. (New) A vital signs sensing assembly of claim 1 further comprising an extension having a proximal side being attached to said probe and a distal side adapted for insertion into the patient's ear canal, wherein said distal side contains at least one light transmitting window for passing light from said light emitting source.
3. (New) A vital signs sensing assembly of claim 1 where said extension is fabricated of material having high thermal conductivity.
4. (New) A vital signs sensing assembly of claim 2 further comprising an optical wave guide being inserted inside said extension between said window and said probe.

5. (New) A vital signs sensing assembly of claim 1 further comprising a contact temperature sensor being attached to the distal end of said ear plug for a thermal coupling with the patient's ear canal and being electrically connected to said probe.
6. (New) A vital signs sensing assembly of claim 1 further comprising a temperature sensor being thermally coupled to said probe.
7. (New) A vital signs sensing assembly of claim 1 wherein said ear plug is fabricated of material being substantially transparent for light emitted by said light emitting source.
8. (New) A vital signs sensing assembly of claim 1 wherein said ear plug has at least one flexible rib being positioned on its outer surface between said proximal end and said distal end.
9. (New) A vital signs sensing assembly of claim 2 further comprising a protective cover fabricated of pliable film and adapted for enveloping at least portion of said extension, wherein the film is being substantially transparent for light emitted by said light source.
10. (New) A vital signs sensing assembly of claim 1 further comprising processing electronic circuit being coupled to said probe.
11. (New) A vital signs sensing assembly of claim 1 further comprising a heater being thermally coupled to said probe.

12. (New) A vital signs sensing assembly of claim 1 where said ear pug incorporates a light stopper being positioned between said proximal end and distal end and being substantially opaque for light emitted by said light source.
13. (New) A method of monitoring blood oxygenation from the patient's ear canal by a device incorporating a probe, comprising the steps of
- positioning the probe outside of the patient's ear canal;
 - positioning at least two light sources inside said probe, wherein the light sources are capable of emitting lights having two different wavelengths;
 - positioning at least one light detector inside said probe;
 - attaching a flexible and optically translucent ear plug to said probe;
 - inserting said ear plug into the patient's ear canal;
 - generating light by said light sources;
 - measuring light intensity reflected by the patients ear canal by said light detector, and
 - relating measured light intensity to pulse oxygenation.
14. (New) A method of monitoring blood oxygenation of claim 13 further comprising the step of elevating temperature of said probe.
15. (New) A method of monitoring blood oxygenation of claim 13 further comprising the step of measuring temperature of said ear plug.

16. (New) A method of monitoring arterial blood pressure from the patient's ear canal by a device incorporating a probe, comprising the steps of

- positioning the probe outside of the patient's ear canal;
- positioning at least one light sources inside said probe;
- positioning at least one light detector inside said probe;
- attaching a flexible and optically translucent ear plug to said probe;
- inserting said ear plug into the patient's ear canal;
- emitting light by said light source;
- measuring variations in light intensity reflected by the patient's ear canal by said light detector, and
- relating said variations in light intensity to the arterial blood pressure.

17. (New) A sensor for simultaneous monitoring blood oxygenation and subcutaneous temperature from the skin of a patient, comprising

- the sensor housing having an outer surface;
- a thermally conductive heat equalizer;
- at least two light sources operating with two different wavelengths;
- at least one light detector;
- a first temperature sensor thermally coupled to the skin of the patient;
- a thermal insulator being positioned between said temperature sensor and said heat equalizer, and
- heater being thermally coupled to said heat equalizer.

18. (New) A sensor for simultaneous monitoring blood oxygenation and subcutaneous temperature of claim 17 further comprising a second temperature sensor being thermally coupled to said heat equalizer and said heater.

19. (New) A sensor for simultaneous monitoring blood oxygenation and subcutaneous temperature of claim 17 further comprising a cup for providing a sanitary barrier between said outer surface of the sensor housing and the skin of a patient, wherein the cup is fabricated of a material being substantially conductive for heat and two wavelengths from said light sources.